

**What is claimed is:**

1. A system for providing zone-based personalized information to a user of mobile communication terminal located in a specific zone, which comprises:

a zone management system that is installed in a specific zone and acquires a MIN information of a mobile communication terminal entering the specific zone;

a zone information management server that receives the MIN information and zone identification information of the zone where the zone management system is installed, requests location registration of the terminal to HLR and retrieves transmission information to be transferred to the terminal according to the MIN information and the zone identification information; and

an SMS server that receives the transmission information and the MIN information from the zone information management server, gets location information of the terminal corresponding to the MIN information from the HLR, and transfers the transmission information and the MIN information to the base station of the cell where the terminal is located according to the location information.

2. The system of claim 1, wherein the zone management system receives mobile terminal information that is transferred from a mobile terminal to a base station, and acquires MIN information from the received mobile terminal information.

3. The system of claim 2, wherein the zone management system comprises:

an antenna which receives high frequency signal including mobile terminal information that is transmitted from the mobile terminal to the base station;

a high frequency signal processing part which converts the high frequency signals transmitted from the antenna to intermediate frequency signals;

a base-band processing part which after converting the intermediate frequency signal received from the high frequency processing part to digital signals, and demodulating, acquires MIN information from the demodulated data; and

a communication part which transmits the MIN information and the zone identification information to the zone information management server under control of a control part.

4. The system of claim 3, wherein the zone management system further comprises a fire detecting part which detects outbreak of fire by sensing heat or smoke.

5. The system of claim 3, wherein the high frequency signal processing part comprises:

a diplexer that splits the received signals from the antenna into high frequency signal of 800MHz band and high frequency signal of 1.8GHz band;

a low noise amplifier that amplifies each high frequency signal inputted from the diplexer;

a band pass filter that selects a needed frequency band from the signals inputted from the low noise amplifier and passes only the selected band;

a downward frequency mixer that converts the high frequency signals to intermediate frequency signals by mixing the high frequency signals inputted from the band pass filter and a local signal inputted from the PLL;

an intermediate frequency amplifier that amplifies the intermediate frequency signals inputted from the downward frequency mixer; and

an intermediate frequency signal processing part that controls gain to each intermediate frequency signal outputted from the intermediate frequency amplifier to a desired level.

6. The system of claim 1, wherein the zone management system receives mobile terminal information transmitted from the mobile terminal to a base station, acquires a MAC address from the received mobile terminal information, and transmits the MAC address and zone identification information to the zone information management server.

7. The system of claim 6, wherein the zone information management server searches a MIN information database by use of the MAC address that is transmitted from the zone management system, searches the MIN information matched to the MAC address, requests the location registration of the mobile terminal to the HLR, searches transmission information to be transmitted to

the mobile terminal by use of the MAC address and the zone identification information, and transmits the transmission information and the MIN information to the SMS server.

5           8.       The system of claim 1, wherein the zone management system periodically transmits a specified zone notifying frequency signal to its own zone, receives bluetooth signals that the mobile terminal transmits when the mobile terminal detects the specified zone notifying frequency signal, and acquires the MIN information from the bluetooth signals.

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9.       The system of claim 8, wherein the mobile terminal comprises:

          a specified zone detecting part that detects the entry into a specified zone by receiving the specified zone notifying frequency signal; and

          a bluetooth signal processing part that, by being converted to active  
15       mode under control of the specified zone detecting part, transmits the MIN information to the zone management system through a bluetooth signal.

10.      The system of claim 8, wherein the zone management system comprises:

20           an antenna which receives bluetooth signal;

          a specified zone notifying frequency processing part that periodically transmits a specified zone notifying frequency signal;

          a received bluetooth signal processing part that acquire the MIN information by processing the bluetooth signal received through the antenna;

and

a control part that transmits the MIN information and the zone identification information to the zone information management server by controlling the communication part when the MIN information is acquired in the received bluetooth signal processing part.

11. The system of claim 10, wherein the zone management system further comprises the fire detecting part which detects outbreak of fire by sensing heat or smoke.

12. The system of claim 1, wherein the zone management system periodically transmits a specified zone notifying frequency signal to its own zone, receives bluetooth signals that the mobile terminal transmits when the mobile terminal detects the specified zone notifying frequency signal, acquires a MAC address from the bluetooth signals, and transmits the MAC address and the zone identification information to the zone information management server.

13. The system of claim 12, wherein when the mobile terminal detects the its entry into a specified zone by receiving the specified zone notifying frequency signal transmitted from the zone management system, it transmits the MAC address to the zone management system through bluetooth signal.

14. The system of claim 12, wherein the zone information management

server searches a MIN information database by use of the MAC address that is transmitted from the zone management system, searches a MIN information matched to the MAC address, requests location registration of the mobile terminal to the HLR by use of the MIN information and the zone identification information, searches transmission information to be transmitted to the mobile terminal by use of the MAC address and the zone identification information, and transmits the transmission information and the MIN information to the SMS server.

10 15. The system of claim 1, wherein the zone management system periodically transmits a specified zone notifying frequency signal to its own zone, receives microwave of 2.4GHz band for WLAN that is transmitted by the mobile terminal detecting the specified zone notifying frequency signal, and acquires the MIN information from the received microwave.

15 16. The system of claim 15, wherein the mobile terminal comprises:  
a specified zone detecting part that detects the entry into a specified zone by receiving the specified zone notifying frequency signal; and  
a microwave processing part that transmits the MIN information to  
20 the zone management system through the microwave by being converted to active mode under control of the specified zone detecting part.

17. The system of claim 15, wherein the zone management system comprises:

an antenna that receives microwaves;

a specified zone notifying frequency processing part that periodically transmits a specified zone notifying frequency signal through the antenna;

5 a received microwave signal processing part that acquire the MIN information by processing the microwave signal received through antennas; and

10 a control part that transmits the MIN information and the zone identification information to the zone information management server by controlling a communication part when the MIN information is acquired in the received microwave signal processing part.

15 18. The system of claim 17, wherein the zone management system further comprises the fire detecting part which detecting outbreak of fire by sensing heat or smoke.

20 19. The system of claim 1, wherein the zone management system periodically transmits a specified zone notifying frequency signal to its own zone, receives microwave of 2.4GHz band for WLAN that the mobile terminal transmits when it detects the specified zone notifying frequency signal, acquires the MAC address from the microwave, and transmits the MAC address and the zone identification information to the zone information management server.

20. The system of claim 19, wherein when the mobile terminal detects the its entry into a specified zone by receiving the specified zone notifying frequency signal transmitted from the zone management system, it transmits the MAC address to the zone management system through microwave.

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21. The system of claim 19, wherein the zone information management server searches a MIN information database by use of the MAC address that is transmitted from the zone management system; searches a MIN information matched to the MAC address, requests location registration of the mobile terminal to the HLR by use of the MIN information and the zone identification information, searches transmission information to be transmitted to the mobile terminal by use of the MAC address and the zone identification information, and transmits the transmission information and the MIN information to the SMS server.

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22. The system of claim 1, wherein the zone management system periodically transmits a specified zone notifying frequency signal to its own zone, receives BCDMA signal that is transmitted by the mobile terminal detecting the specified zone notifying frequency signal, and acquires the MIN information from the received BCDMA signal.

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23. The system of claim 22, wherein the mobile terminal comprises:

a specified zone detecting part that detects the entry into a specified zone by receiving the specified zone notifying frequency signal; and

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a BCDMA signal processing part that transmits the MIN information



to the zone management system through the BCDMA signal by being converted to active mode under control of the specified zone detecting part.

24. The system of claim 22, wherein the zone management system comprises:

an antenna that receives BCDMA signal;

a specified zone notifying frequency processing part that periodically transmits a specified zone notifying frequency signal through the antenna;

a received BCDMA signal processing part that acquire the MIN information by processing the BCDMA signal received through the antenna; and

a control part that transmits the MIN information and the zone identification information to the zone information management server by controlling a communication part when the MIN information is acquired in the receiving BCDMA signal processing part.

25. The system of claim 24, wherein the zone management system further comprises a fire detecting part which detecting outbreak of fire by sensing heat or smoke.

26. The system of claim 1, wherein the zone management system periodically transmits a specified zone notifying frequency signal to its own zone, receives BCDMA signal that the mobile terminal transmits when it detects the specified zone notifying frequency signal, acquires a MAC address

from the BCDMA signal, and transmits the MAC address and the zone identification information to the zone information management server.

5 27. The system of claim 26, wherein when the mobile terminal detects the its entry into a specified zone by receiving the specified zone notifying frequency signal transmitted from the zone management system, it transmits the MAC address to the zone management system through the BCDMA signal.

10 28. The system of claim 26, wherein the zone information management server searches a MIN information database by use of the MAC address that is transmitted from the zone management system, searches a MIN information matched to the MAC address, requests location registration of the mobile terminal to the HLR by use of the MIN information and the zone identification information, searches transmission information to be transmitted to the mobile  
15 terminal by use of the MAC address and the zone identification information, and transmits the transmission information and the MIN information to the SMS server.

20 29. The system of claim 1, wherein the zone management system periodically transmits a specified zone notifying frequency signal to its own zone, receives microwave for ZigBee of 2.4GHz band/915MHz band/868MHz band that is transmitted by the mobile terminal detecting the specified zone notifying frequency signal, and acquires the MIN information from the received microwave.

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30. The system of claim 29, wherein the mobile terminal comprises:

a specified zone detecting part that detects the entry into a specified zone by receiving the specified zone notifying frequency signal; and

5 a microwave processing part that transmits the MIN information to the zone management system through microwave by being converted to active mode under control of the specified zone detecting part.

31. The system of claim 29, wherein the zone management system comprises:

10 an antenna that receives microwave;

a specified zone notifying frequency processing part that periodically transmits a specified zone notifying frequency signal through the antenna;

15 a received microwave processing part that acquire the MIN information by processing the microwave received through the antenna; and

a control part that transmits the MIN information and the zone identification information to the zone information management server by controlling a communication part when the MIN information is acquired in the receiving microwave processing part.

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32. The system of claim 31, wherein the zone management system further comprises a fire detecting part which detecting outbreak of fire by sensing heat or smoke.

33. The system of claim 1, wherein the zone management system periodically transmits a specified zone notifying frequency signal to its own zone, receives microwave for ZigBee of 2.4GHz band/915MHz band/868MHz band that mobile terminal transmits when it detects the specified zone notifying frequency signal, and acquires a MAC address from the microwave,  
5 and transmits the MAC address and the zone identification information to the zone information management server.

34. The system of claim 33, wherein when the mobile terminal detects  
10 the its entry into a specified zone by receiving the specified zone notifying frequency signal transmitted from the zone management system, it transmits the MAC address to the zone management system through microwave.

35. The system of claim 33, wherein the zone information management server searches a MIN information database by use of the MAC address that is  
15 transmitted from the zone management system, searches a MIN information matched to the MAC address, requests location registration of the mobile terminal to the HLR by use of the MIN information and the zone identification information, searches transmission information to be transmitted to the mobile  
20 terminal by use of the MAC address and the zone identification information, and transmits the transmission information and the MIN information to the SMS server.

36. The system of claim 1, wherein the zone management system periodically transmits a specified zone notifying frequency signal to its own zone, receives radio wave that is transmitted by the mobile terminal detecting  
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the specified zone notifying frequency signal, and acquires the MIN information from the received radio wave.

37. The system of claim 36, wherein the mobile terminal comprises:

5 a specified zone detecting part that detects the entry into a specified zone by receiving the specified zone notifying frequency signal; and

a radio wave processing part that transmits the MIN information to the zone management system through radio wave by being converted to active mode under control of the specified zone detecting part.

10 38. The system of claim 36, wherein the zone management system comprises:

an antenna that receives radio wave;

15 a specified zone notifying frequency processing part that periodically transmits a specified zone notifying frequency signal;

a received radio wave processing part that acquire the MIN information by processing the radio wave received through the antenna; and

20 a control part that transmits the MIN information and the zone identification information to the zone information management server by controlling a communication part when the MIN information is acquired in the receiving radio wave processing part.

39. The system of claim 38, wherein the zone management system

further comprises a fire detecting part which detecting outbreak of fire by sensing heat or smoke.

40. The system of claim 1, wherein the zone management system periodically transmits a specified zone notifying frequency signal to its own zone, receives radio wave that mobile terminal transmits when it detects the specified zone notifying frequency signal, acquires a MAC address from the radio wave, and transmits the MAC address and the zone identification information to the zone information management server.

41. The system of claim 40, wherein when the mobile terminal detects the its entry into a specified zone by receiving the specified zone notifying frequency signal transmitted from the zone management system, it transmits the MAC address to the zone management system through radio wave.

42. The system of claim 40, wherein the zone information management server searches a MIN information database by use of the MAC address that is transmitted from the zone management system, searches a MIN information matched to the MAC address, requests location registration of the mobile terminal to the HLR by use of the MIN information and the zone identification information, searches transmission information to be transmitted to the mobile terminal by use of the MAC address and the zone identification information, and transmits the transmission information and the MIN information to the SMS server.

43. The system of claim 1, wherein the zone which the zone management system supervises covers 2 to 50m in radius.

44. A method for providing a specified zone-base personalized information, the method comprising:

acquiring MIN information of a mobile communication terminal entering a specific zone, in a zone management system;

requesting location registration of the terminal to HLR by use of the MIN information and a zone identification information received from the zone management system, in a zone information management server;

retrieving transmission information to be transferred to the terminal according to the zone identification information and the MIN information, in the zone information management server;

transferring the transmission information and the MIN information to a SMC via a SMS server;

generating the SMS message by use of the transmission information in the SMC and getting location information of the mobile terminal corresponding to the MIN information from the HLR, in the SMC;

transferring the SMS message and the MIN information to base station of the cell where the terminal is located according to the location information; and

transforming the SMS message and the MIN information into the data burst message format, and transmitting them to the terminal, in the base station.

45. The method of claim 44, further comprising:

notifying the zone management server of an outbreak of fire when the zone management system detects the outbreak of fire;

5 transferring the MIN information list of the mobile communication terminals, which are located in the zone of the zone management system, and the announcement of the outbreak of fire to the SMC via the SMS server;

generating the SMS message by use of the announcement of the fire in the SMC and getting location information of the mobile terminal corresponding to the MIN information list from the HLR;

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transferring the SMS message and the MIN information list to base station of the cell where the terminal is located via MSC according to the location information; and

transforming the SMS message and the MIN information into the data burst message format, and transmits them to the terminal, in the base station.

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46. The method of claim 45, further comprising:

transferring the MIN information list of the mobile terminal, which are located in the zone of the other zone management system which is located in the same building where the zone management system notifying the fire alarm is also located, and the announcement of the outbreak of fire to the SMS server.

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47. The method of claim 44, wherein the step of acquiring the MIN information comprises:

receiving mobile terminal information which is transmitted by the mobile terminal entering the specific zone under control of the zone management system; and

acquiring the MIN information from the received terminal information.

48. The method of claim 44, wherein the step of acquiring the MIN information comprises:

periodically transmitting the specific zone notifying frequency signal to the corresponding zone;

receiving the Bluetooth signal from the mobile terminal that detects the specific zone notifying frequency signal; and

acquiring the MIN information from the Bluetooth signal.

49. The method of claim 44, wherein the step of acquiring the MIN information comprises:

periodically transmitting the specific zone notifying frequency signal to the corresponding zone;

receiving the microwave of 2.4GHz, which is assigned for WLAN, from the mobile terminal which detects the specific zone notifying frequency signal; and

acquiring the MIN information from the microwave.

50. The method of claim 44, wherein the step of acquiring the MIN information comprises:

5                      periodically transmitting the specific zone notifying frequency signal to the corresponding zone;

                         receiving BCDMA signal from the mobile terminal which detects the specific zone notifying frequency signal; and

                         acquiring the MIN information from the BCDMA signal.

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51. The method of claim 44, wherein the step of acquiring the MIN information comprises:

                         periodically transmitting the specific zone notifying frequency signal to the corresponding zone;

15                      receiving microwave for ZigBee of 2.4GHz band/915MHz band/868MHz band from the mobile terminal which detects the specific zone notifying frequency signal; and

                         acquiring the MIN information from the microwave.

20                      52. The method of claim 44, wherein the step of acquiring the MIN information comprises:

                         periodically transmitting the specific zone notifying frequency signal to the corresponding zone;

receiving the radio wave from the mobile terminal which detects the specific zone notifying frequency signal; and

acquiring the MIN information from the radio wave.

5        53.        The method of claim 44, wherein the step of acquiring the MIN information comprises:

transmitting location registration request message to the Mobile Terminal entering a specified zone;

10        receiving Bluetooth signal from the Mobile Terminal receiving the location registration request message; and

acquiring the MIN information from the Bluetooth signal.

54.        The method of claim 44, wherein the step of acquiring the MIN information comprises:

15        transmitting location registration request message to the Mobile Terminal entering a specified zone;

receiving microwave for WLAN of 2.4GHz band from the Mobile Terminal receiving the location registration request message; and

acquiring the MIN information from the microwave.

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55.        The method of claim 44, wherein the step of acquiring the MIN information comprises:

transmitting location registration request message to the Mobile Terminal entering a specified zone;

receiving BCDMA signal from the Mobile Terminal receiving the location registration request message; and

5 acquiring the MIN information from the BCDMA signal.

56. The method of claim 44, wherein the step of acquiring the MIN information comprises:

10 transmitting location registration request message to the Mobile Terminal entering a specified zone;

receiving microwave for ZigBee of 2.4GHz band/915MHz band/868MHz band from the Mobile Terminal receiving the location registration request message; and

15 acquiring the MIN information from the microwave.

57. The method of claim 44, wherein the step of acquiring the MIN information comprises:

transmitting location registration request message to the Mobile Terminal entering a specified zone;

20 receiving radio wave from the Mobile Terminal receiving the location registration request message; and

acquiring the MIN information from the radio wave.

58. The method of claim 44, further comprising:

acquiring MAC information of the mobile terminal entering the zone under supervision, in the zone management system;

5 receiving the MAC information from the zone management system and acquiring the MIN information matched to the MAC information by searching a MIN information database by use of the received MAC information, in the zone information management server;

10 requesting the location registration of the mobile terminal to the HLR by use of the MIN information and the zone identification information transmitted along with the MAC information from the zone management system;

searching for the information to be transferred to the corresponding user according to the MIN information and the zone identification information, in the zone information management server; and

15 transferring the transmission information and the MIN information via the SMS server to the SMC.